

WHAT IS CLAIMED IS:

1. A perpendicular magnetic recording medium comprising:

a substrate,

a magnetic layer composed of cobalt-containing magnetic crystal grains with hexagonal closed-packed (hcp) structure, which is formed above said substrate, wherein;

the value of  $\Delta D/\langle D \rangle \times R$  is no greater than 0.02,  
where

said  $\langle D \rangle$  is an average grain size of said magnetic grains,

said  $\Delta D$  is a standard deviation of the distribution of the size of said magnetic crystal grains, and

said  $R$  is the stacking fault density of said magnetic layer.

2. A perpendicular magnetic recording medium according to Claim 1, wherein,

said value of  $\Delta D/\langle D \rangle$  is no greater than 0.4.

3. A perpendicular magnetic recording medium according to Claim 2, wherein,

the value of  $R$  is no greater than 0.05.

4. A perpendicular magnetic recording medium according to Claim 1, further comprising:

a non-magnetic underlying layer with hcp structure

formed under said magnetic layer.

5. A perpendicular magnetic recording medium according to Claim 1, said magnetic layer further comprising:

a first magnetic layer containing at least cobalt and platinum,

a second magnetic layer formed on said first magnetic film, wherein, the content of platinum in said first magnetic layer is no greater than 12 at%.

6. A perpendicular magnetic recording medium according to Claim 1, wherein,

a full width at half maximum of a distribution of angles of which the (00.1) plane makes with the surface of the substrate has no greater than 8 degrees.

7. A perpendicular magnetic recording medium according to Claim 1, wherein,

a perpendicular coercive force is no less than 4000 Oe.

8. A method for producing a perpendicular magnetic recording medium, comprising

a step of forming a cobalt-containing magnetic film directly or with an intervention of an underlayer on a substrate, and

a step of heating said magnetic film.

9. A method for producing a perpendicular magnetic

recording medium according to Claim 8, further comprising:

a step of forming a protective layer on said magnetic layer, and

a step of heating the thus formed layers under atmospheric pressure after the formation of said protective layer, wherein

said step of heating is carried out with the heating temperature no higher than 250°C.

10. A method for producing a perpendicular magnetic recording medium according to Claim 8, further comprising:

a step of forming a non-magnetic film with hexagonal closed-packed (hcp) structure before the formation of said magnetic film.

11. A magnetic recording apparatus equipped with the perpendicular magnetic recording medium defined in Claim 1.